

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking to Oversee the
Resource Adequacy Program, Consider Program
Refinements, and Establish Forward Resource
Adequacy Procurement Obligations.

Rulemaking 19-11-009
(Filed November 7, 2019)

**SAN DIEGO GAS & ELECTRIC COMPANY (U 902 E)
SECOND REVISED TRACK 3B.2 PROPOSAL**

AIMEE M. SMITH
8330 Century Park Court, CP32
San Diego, California 92123
Telephone: (858) 654-1644
Facsimile: (858) 654-1586
E-mail: amsmith@sdge.com

Attorney for:
SAN DIEGO GAS & ELECTRIC COMPANY

February 26, 2021

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I. INTRODUCTION

In accordance with the Rules of Practice and Procedure of the California Public Utilities Commission (the “Commission”), the *Assigned Commissioner’s Scoping Memo and Ruling* issued in the above-captioned proceeding on January 22, 2020, and the *Assigned Commissioner’s Amended Track 3.B and 4 Scoping Memo and Ruling* issued in the above-captioned proceeding on December 11, 2020 (“Amended Scoping Ruling”), San Diego Gas & Electric Company (“SDG&E”) submits this second revised Track 3.B2 proposal.

II. BACKGROUND

Track 3B.2 of the instant proceeding will consider stakeholders’ proposals for structural changes and refinements to the Commission’s Resource Adequacy (“RA”) program.^{1/} Parties filed Track 3B proposals on August 7, 2020. After redesignation of Track 3B as Track 3B.2 in the Amended Scoping Ruling, parties filed revised Track 3B.2 proposals on December 18, 2020. SDG&E notes, in particular, the revised Track 3B.2 proposals submitted by Pacific Gas and Electric Company (“PG&E”) and jointly by Southern California Edison Company (“SCE”) and the California Community Choice Association (“CalCCA”) (together, the “Joint Parties”). Both

^{1/} Amended Scoping Ruling, p. 3.

proposals offer creative ideas that provide a useful starting point for development of an RA program structure that ensures that sufficient capacity is available to meet load during the entire day. In reviewing both proposals, SDG&E believes that PG&E’s “Slice-of-Day” proposal^{2/} may be easier to implement than the Joint Parties’ proposal, which would add a new capacity product, Net Qualifying Energy (“NQE”).^{3/} SDG&E submits that creation of an additional capacity product would further complicate the RA framework for purposes of procurement, compliance validation and portfolio optimization. While PG&E’s proposal also presents implementation challenges, SDG&E believes that it can be refined to provide the same level of reliability while reducing implementation complexities.

III. PROPOSAL

In the attached proposal, SDG&E uses PG&E’s Track 3B.2 Slice-of-Day proposal as a starting point, offering revisions to PG&E’s proposal that are intended to reduce complexity and simplify implementation. Specifically, SDG&E proposes that each 24-hour period be split into six four-hour slices, with a capacity requirement established for each slice that reflects need during that period, and then aggregation of all six slices to determine the overall RA need for the 24-hour period. Load-serving entities (“LSEs”) would rely on the reliability resources included in their Integrated Resource Plan (“IRP”)-based portfolios to meet the aggregate capacity requirement for the day.

^{2/} *Revised Track 3B.2 Proposals of Pacific Gas and Electric Company*, filed on December 18, 2020, Attachment 1.

^{3/} *See Southern California Edison Company and California Community Choice Association’s Revised Track 3B.2 Proposal* (“Joint Parties Revised Track 3B.2 Proposal”), filed on December 18, 2020, Attachment A, p. A-13.

Determining the resources available to meet the need within each slice would involve a Slice Multiplier (“SM”) concept that calculates the number of slices within a day that each RA resource can generate to meet need. SDG&E’s proposal assumes that the statewide IRP resource planning process has already determined the optimal resource mix and will ensure that the appropriate resource types are available to meet reliability needs during each slice of the day. To meet RA program requirements, the LSEs will first consider the net qualifying capacity (“NQC”) and determine the Slice Multiplier for each of its portfolio resources, and then offer its capacity resources to the California Independent System Operator (“CAISO”) in each slice. The optimal resource dispatch for each slice would be determined by the CAISO’s market optimization process.

IV. CONCLUSION

For the reasons set forth herein, the Commission should consider SDG&E’s proposal for structural refinements to RA program and should establish a workshop process to further address implementation details.

Respectfully submitted this 26th day of February, 2021.

/s/ Aimee M. Smith
AIMEE M. SMITH

8330 Century Park Court, CP32
San Diego, California 92123
Telephone: (858) 654-1644
Facsimile: (858) 654-1586
E-mail: amsmith@sdge.com

Attorney for:
SAN DIEGO GAS & ELECTRIC COMPANY

ATTACHMENT A
SDG&E Second Revised Track 3B.2 Proposal

SDG&E SECOND REVISED TRACK 3B.2 PROPOSAL

A. Overview

Introduction of a new dimension (*i.e.*, time) into the Commission’s Resource Adequacy (“RA”) program, while improving reliability, creates additional complexity. SDG&E describes herein a proposed modified version of the “Slice-of-Day” proposal offered by Pacific Gas and Electric Company (“PG&E”)^{1/} that minimizes the administrative burden associated with RA compliance under the Slice-of-Day approach and avoids the need to change must offer obligations (“MOOs”) in the California Independent System Operator (“CAISO”) markets or to create new RA products such as the Net Qualifying Energy (“NQE”) product jointly proposed by Southern California Edison Company (“SCE”) and the California Community Choice Association (“CalCCA”) (together, the “Joint Parties”).^{2/}

As discussed below, SDG&E proposes implementation of the Slice-of-Day framework proposed by PG&E, but with modifications intended to simplify the process and reduce administrative burden. SDG&E proposes that each 24-hour period be split into six four-hour slices, with a capacity requirement established for each slice that reflects need during that period, and then aggregation of all six slices to determine the overall RA need for the 24-hour period. Determining the resources available to meet the need within each slice would involve a Slice Multiplier (“SM”) concept that calculates the number of slices within a day that each RA resource can generate to meet need. For example, if a 100 MW resource can generate 16 hours

^{1/} *Revised Track 3B.2 Proposals of Pacific Gas and Electric Company* (“PG&E Revised Track 3B.2 Proposals”) filed on December 18, 2020, Attachment 1.

^{2/} *See Southern California Edison Company and California Community Choice Association’s Revised Track 3B.2 Proposal* (“Joint Parties Revised Track 3B.2 Proposal”), filed on December 18, 2020, Attachment A, p. A-13.

in a day, that resource will have a SM of 4 ($16/4 = 4$) and would be allowed to count 400 ($100 \times 4 = 400$) MW towards meeting RA requirements.

Ensuring that the “right” resource is available when needed (*e.g.*, that solar resources are available during the daytime slices) would happen naturally at a macro level through the Commission’s Integrated Resource Plan (“IRP”) process, which guides resource mix on a statewide basis, and on a micro level through the Slice Multiplier and the CAISO’s market optimization for each slice. For example, if a 100 MW solar resource has a SM of two, meaning that it can generate 8 hours in a day and is available in two of the six slice periods, the CAISO’s optimization process will dispatch the resource when it is the most effective – *i.e.*, during the daytime slices – and will not dispatch the resource when it is less effective compared to other available resources. Since the resource has a SM of two, it would be available during two slices of each day at most, however it might be dispatched for fewer than two slices in a day (*i.e.*, if the CAISO curtails it or does not dispatch it for the entire 8 hour period within that day).

The main difference between PG&E’s proposal and SDG&E’s proposal is that PG&E’s proposal would require each load-serving entity (“LSE”) to seek to design a portfolio of RA resources for each *specific* slice within a day, whereas under SDG&E’s proposed process, the RA portfolio would be based on IRP planning. SDG&E’s proposal assumes that the statewide IRP planning process has determined the optimal resource mix and will ensure that the appropriate resource types are available to meet reliability needs during each slice of the day. Rather than seeking to meet a capacity requirement for each slice of the day, the LSE would aggregate the capacity requirement for the six slices to determine the overall RA need for the 24-hour period and rely on its IRP-based portfolio of reliability resources to meet the aggregate capacity requirement for the day. To meet RA program requirements, the LSEs will first

consider the net qualifying capacity (“NQC”) and determine the Slice Multiplier for each of its portfolio resources, and then offer its capacity resources to the CAISO in each slice. The optimal resource dispatch for each slice would be determined by the CAISO’s market optimization process.

SDG&E submits that its proposed modifications will greatly reduce the complexity of procuring under a Slice-of-Day framework. While SDG&E’s proposal offers less granularity than PG&E’s proposal to impose multiple different capacity requirements within one day, it is perhaps a more realistic approach and strikes a reasonable balance between the goals of implementing necessary reforms to the RA program, on the one hand, and establishing a program that is workable and avoids unnecessary complication, on the other. The need to prevent imposition of new hurdles within the RA program wherever possible is particularly important given the state’s growing reliance on energy-limited resources, which by itself makes compliance more complex and burdensome. Put simply, this simplified version of PG&E’s Slice-of-Day proposal is both feasible and effective, and avoids a circumstance where “the perfect becomes the enemy of the good.”

B. RA Program Product

SDG&E proposes that the RA program continue to focus on capacity and that additional RA products such as the Joint Parties’ proposed NQE not be established. The RA program is meant to provide the CAISO with a basket of resources in the short-term that result from Commission-approved procurement of individual LSEs’ long-term IRPs. In other words, long-term planning ensures that there are sufficient and appropriate resources available on the grid when needed. The RA program generally optimizes those long-term resources for near-term need. The CAISO’s energy markets optimize for the availability and capability of resources on

an hourly basis; adding additional RA products would greatly complicate this process and could create significant challenges without necessarily offering an optimal result. Accordingly, SDG&E recommends transacting using one standard capacity product rather than multiple capacity products to ensure efficiency in California’s bilateral procurement market.

In defining the capacity product, the current RA construct requires RA resources to be able to operate for four hours per day for three consecutive days.^{3/} This minimum resource requirement allows a 24-hour day to be split into multiple slices under the Slice-of-Day proposal offered by PG&E. SDG&E believes it is reasonable to divide the day into six four-hour slices; other configurations that would allow for a greater number of hours in each slice (*e.g.*, six hours) would increase procurement complexity because multiple four-hour resources would need to be pieced together in order to meet a six-hour slice capacity requirement.^{4/} Similarly, if each slice were shorter in duration (*e.g.*, hourly) LSEs would be required to account for resources each hour, which would be highly burdensome. Practically speaking, the administrative burden associated with compliance increases as the number of compliance periods within the day increases, as is evident from the revised Track 3B.2 proposal offered by the Joint Parties, which involves a three-prong test with multiple requirements. Thus, the capacity product should reflect a four-hour Slice-of-Day construct.

C. RA Program Requirements

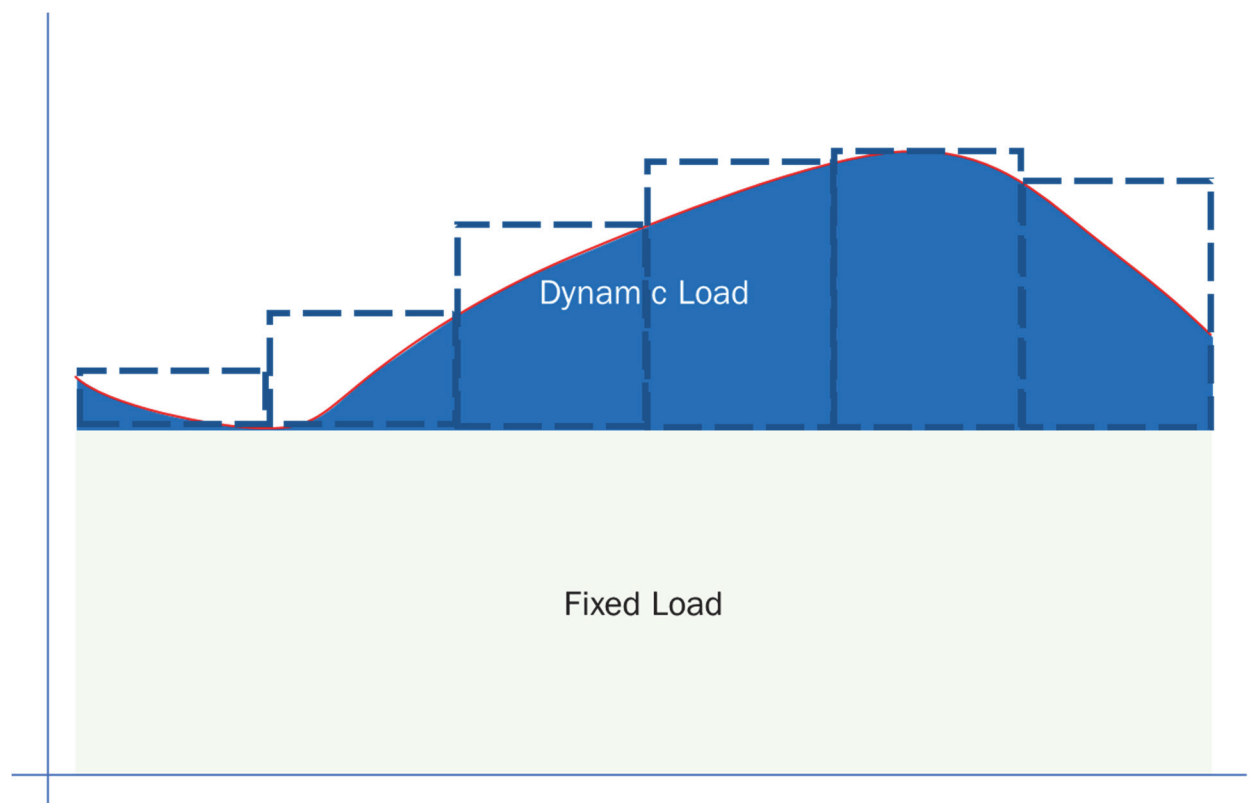
SDG&E proposes to establish a Fixed Load (“FL”) need and Dynamic Load (“DL”) need based on the California Energy Commission’s (“CEC’s”) forecasted load profiles. The Fixed Load need would be set by the minimum load of the load forecast for the month, quarter, season

^{3/} D.04-10-035, Conclusion of Law 17.

^{4/} It is reasonable to assume that longer duration resources could qualify for the six-hour slice, but ultimately the shorter duration resources would not.

or year. SDG&E does not propose a frequency at this stage but notes that additional discussion is needed. The Dynamic Load would be the portion above the minimum load to the peak of the load forecast. In other words, total load minus the Fixed Load (minimum load) would equal the Dynamic Load. Figure 1 below provides an illustrative example of FL and DL needs.

Figure 1

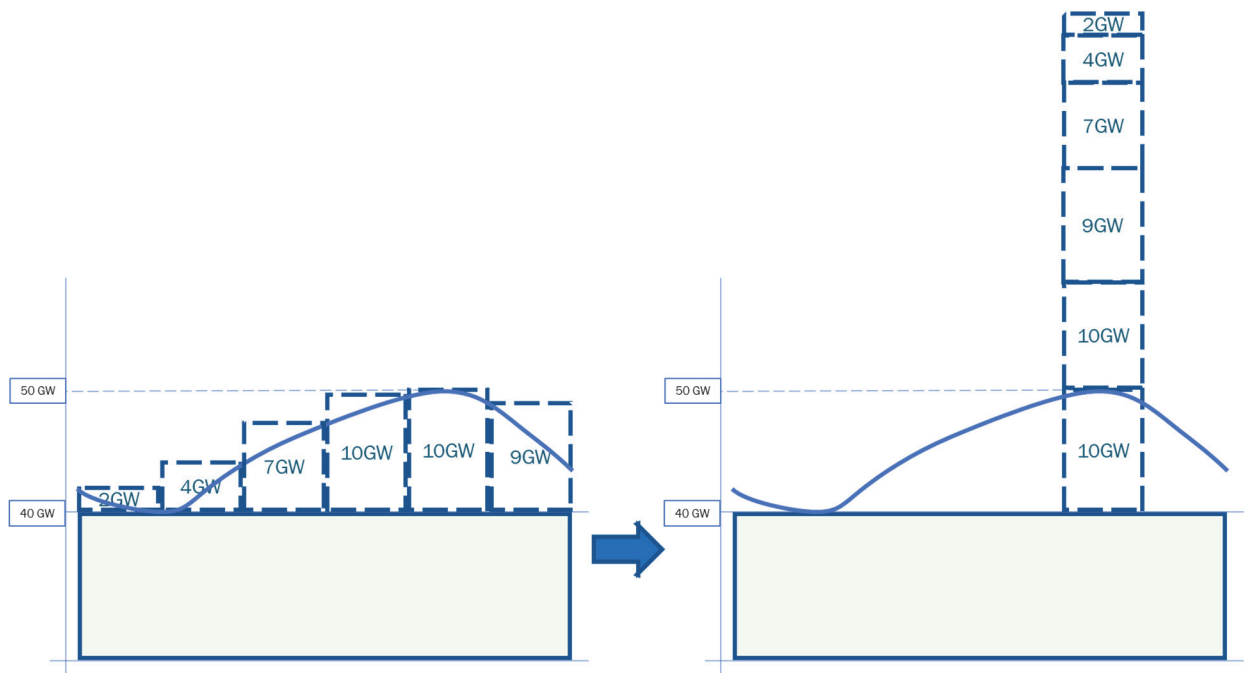


FL needs must be met with 24x7 resources that are not energy-limited. LSEs will count a resource's NQC towards meeting the FL need.^{5/} DL needs would be the sum of the maximum load in each slice minus fixed load, highlighted in dark blue in Figure 1. By aggregating the DL needs into a single slice, existing four-hour capacity products can be used to meet the DL need. This allows for a standard product to be used to meet all of the slice needs of the day. Figure 2

^{5/} Alternatively, the FL need may be set at the minimum of the net load curve to allow LSEs to meet load with only renewable and energy limited resources.

below provides an illustrative example of the stack analysis for the DL need. This approach reduces the complexity of the capacity products for procurement, compliance validation and CAISO market processes while ensuring that sufficient energy is available to meet all hours of the day.

Figure 2



D. Energy Storage Charging Requirement

SDG&E anticipates that more energy storage resources will be built in the future to meet load needs. Energy storage resources are non-generating resources that store energy produced by other generating resources to be used at a later time. Since most energy storage resource owners are not able to source their own charging needs outside of RA, the RA framework must ensure that the total charging need of the energy storage resources are met with other RA resources on the grid such that the energy storage resources are available to discharge in response to grid needs. This need itself would be in addition to the forecasted load and may require additional

resources to supply the energy since the energy that is used to serve load cannot *also* be used to charge the energy storage resource. Likewise, an energy storage resource that is in charging mode cannot simultaneously be discharged to support load. Figure 3 below provides an illustrative example of the total charging requirement if the DL need is met primarily by energy storage resources.

Figure 3

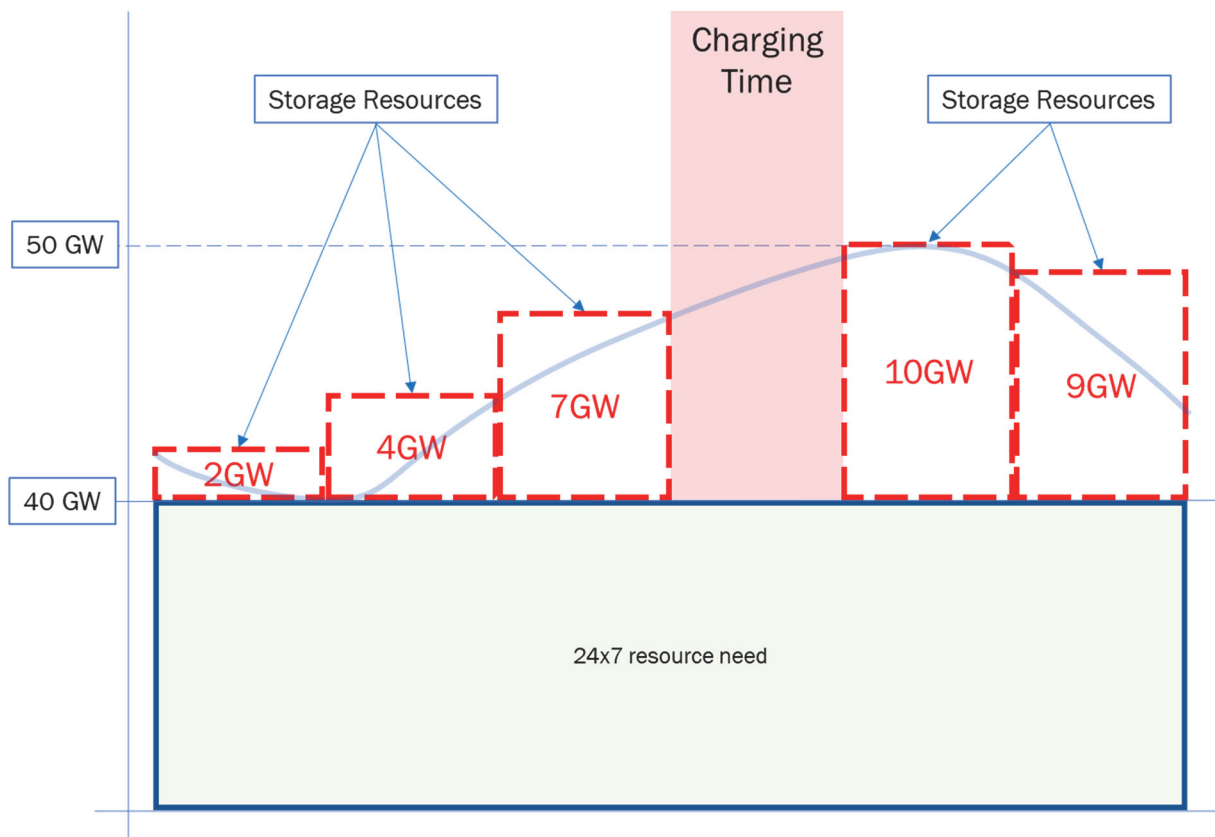


Figure 3 assumes that the DL needs in five of six slices are met with energy storage resources, all being four hours in duration. This slice labeled “Charging Time” is intended to charge the energy storage resources to 100% state of charge (“SOC”) to ensure that they can meet load at a later time and will be proportional to the amount of energy storage resources that would be used to meet load. During the illustrative charging time, the storage resources may not

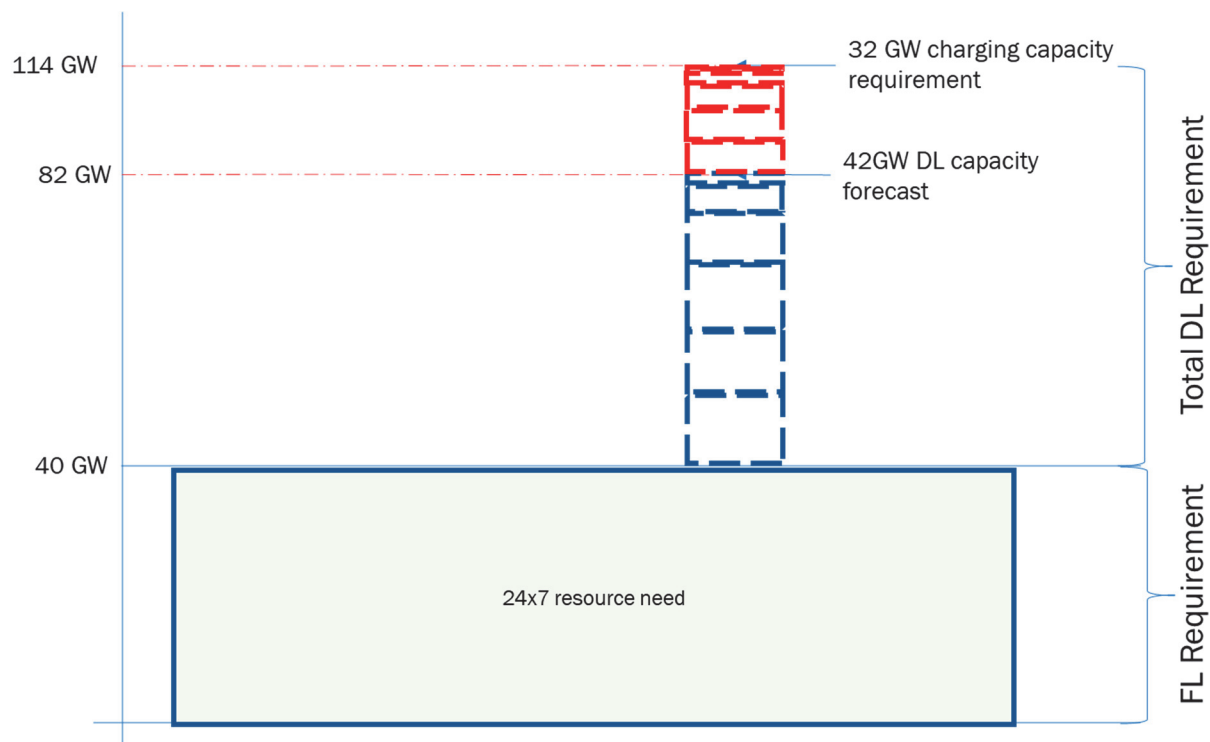
be available to meet the load and therefore cannot count towards the DL need in that slice. The charging requirement must also account for roundtrip efficiency losses to ensure sufficient energy is provided. The charging requirement will be in addition to the DL need and must be met with generating resources. This means that there may be a limit to the amount of energy storage resources that can be shown to meet the DL need and such energy storage resources must be properly paired to ensure there is sufficient state of charge to meet the DL need for multiple slices of the day.

E. RA Procurement Obligation

As discussed above, LSEs will be required to meet a Fixed Load requirement and a Dynamic Load plus Storage Charging requirement (together, a “Total Dynamic Load” or “TDL” requirement) in the RA framework. The FL requirement will be met by 24x7 generating resources while the TDL requirement may be met by 24x7 or energy-limited resources. A limit may be required to ensure sufficient capacity from generating resources is available to charge energy storage resources to meet the TDL. Additional discussion will be required through implementation workshops to ensure that the TDL requirement is not met solely through stand-alone renewable resources under this simplified framework. The total of the FL and TDL requirements would also incorporate appropriate planning reserve margins to ensure that other contingencies are also covered.^{6/} The planning reserve margin should be based on an appropriate loss of load expectation study to achieve a 1-in-10 year loss of load. Figure 4 provides an illustrative example of the RA Requirements.

^{6/} SDG&E does not address herein the appropriate level of the planning reserve margin.

Figure 4



F. Requirement Allocation

SDG&E's modifications to PG&E's requirement allocation proposal continues the top-down allocation approach reflected in today's established processes. A top-down approach provides the benefits of coincidence adjustments so that LSEs avoid the need to over-procure capacity if their load profiles do not peak at the same time as the rest of the load. An LSE may still elect to procure capacity or energy to meet the needs of its own customers, but this is not a requirement under the RA framework.

The Commission may wish to consider alternatives to the allocation process, specifically regarding the energy storage charging requirement. It is possible that some LSEs may not have energy storage resources in their portfolios and therefore may not wish to receive charging requirements based on other LSEs' energy storage resources that may be shown. In such a case,

SDG&E submits that it is possible to modify the RA Compliance templates so that each LSE would be responsible for its own charging requirements based on the energy storage resources in its portfolio that the LSE expects to show during the compliance filing process. SDG&E believes this could be further discussed during implementation workshops.

G. RA Program Compliance

As discussed above, SDG&E recommends adoption of PG&E's Slice-of-Day construct with all six slices in a day being stacked to result in a final, aggregate capacity requirement. SDG&E's proposed Slice Multiplier concept calculates the number of slices within a day that each RA resource can generate to meet need. SDG&E proposes that the Commission and CAISO both publish the Slice Multiplier for each RA resource in their Qualifying Capacity and Net Qualifying Capacity reports, respectively. This will help market participants to efficiently procure resources without the complicating factor of determining whether a given resource can meet a specific slice of the day. SDG&E provides two examples of the compliance showings below using the assumptions set forth in Table 1.

Table 1

Assumptions	Megawatts (MW)
CEC Peak Load Forecast	1,000
CEC Minimum Load Forecast	579
Requirements	
Fixed Load Requirement	579
Dynamic Load	1,493
Charging Load	500
Total DL Requirement	1,993

Example 1:

Using the assumptions and requirements reflected in Table 1 above, assume that an LSE has under contract an 829 MW resource that is not energy-limited and can provide 24x7 generation. In this case, the resource would count 579 MW towards the FL requirement. The remaining 250 MWs would receive a Slice Multiplier of 6 to count 1,500 MWs towards the Total DL Requirement. Additionally, the LSE also procured a 250 MW, 8-hour storage resource, which would qualify for a Slice Multiplier of 2 and count 500 MW towards the 1,993 MW Total DL Requirement. As a result, the LSE has procured 1,079 MWs (829 + 250) of capacity and be able to count 2,579 MW ($579 + 250 * 6 + 250 * 2$) towards 579MW and 1,993 MW of FL and TDL Requirement, respectively for a total of 2,572 MW RA requirement. Table 2 below provides the details for Example 1.

Table 2

Requirement Type	Resource Type	Resource QC (MW)	Slice Multiplier	Capacity Shown (MW)	Total Requirement (MW)
Fixed Load					579
	24x7 resource	579	1x	579	
Total DL Requirement					1,993
	24x7 resource	250	6x	1,500	
	8-hr storage	250	2x	500	
	Total	1,079		2,579	2,572

Example 2:

Using the same Table 1 assumptions and requirements, an LSE procured a 579 MW resource capable of providing energy on a 24x7 basis. That resource would be able to meet the FL requirement. The LSE also procured 275 MWs of a 16-hour import resource, 200 MWs of solar,^{7/} and 500 MWs of a 4-hour energy storage resource. In this case the SM for the import, solar and storage resource would be 4, 2 and 1 respectively. In this example, the LSE procured a total of 1,554 MW of capacity and be able to count 2,579 MW towards 579 MW and 1,993 MW of FL and TDL Requirements, respectively for a total of 2,572 MW of RA requirements. Table 3 below provides the details for Example 2.

Table 3

Requirement Type	Resource Type	Resource QC (MW)	Slice Multiplier	Capacity Shown (MW)	Total Requirements (MW)
Fixed Load					579
	24x7 resource	579	1x	579	
Total DL Requirement					1,993
	16-hour Import	275	4x	1,100	
	8-hour Solar	200	2x	400	
	4-hr storage	500	1x	500	
	Total RA	1,554		2,579	2,572

^{7/} Assume the 200 MW is the qualifying capacity of the solar resource, not the maximum output.

H. Resource Counting

The counting methodologies for various resources are key to ensuring that such resources are not over- or under-counted towards the RA requirements. SDG&E generally agrees with PG&E's proposal that an exceedance methodology should be used under a Slice-of-Day framework for intermittent renewable resources like solar and wind. This method is appropriate for both PG&E and SDG&E's modified proposal because the SM would reflect the resource's capability to meet load during specific hours, rather than the current assumption of all hours. The SM may result in a requirement that LSEs procure additional resources for their current portfolio if energy-limited resources are unable to meet load throughout the entire day.

SDG&E submits that additional counting methodologies may be refined to ensure consistency with the framework. SDG&E recommends that the Commission set a schedule for implementation workshops once a new RA framework has been adopted.

I. Must Offer Obligations

The current MOOs for RA resources are generally 24x7 with certain exceptions. PG&E's proposal modifies the MOO for RA resources based on the specific slice of the day for which the resource is shown.^{8/} Under SDG&E's proposal, the MOO can remain 24x7 and allow the CAISO to optimize when resources will be dispatched. This provides greater flexibility for the CAISO to manage the grid without making changes to its processes to account for when certain resources will or will not be available to serve load. If the CAISO required a resource to remain online but it was not shown for the next slice and did not have a MOO, the CAISO might need to exceptionally dispatch a resource during the following slice. Additionally, if an LSE were to show some resources for specific slices that interfere or contradict the operating

^{8/} PG&E Revised Track 3B.2 Proposals, Attachment 1, p. A-13.

parameters, the resource may receive infeasible dispatch instructions. SDG&E submits that the optimal approach is to allow the MOO to remain as is today to allow the CASIO to manage the grid.
